DIRECT TESTIMONY OF

MARK C. FURTICK, P.E.

ON BEHALF OF

DOMINION ENERGY SOUTH CAROLINA, INC.

DOCKET NO. 2019-182-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Mark C. Furtick. My business address is 220 Operation Way, Cayce, South Carolina. I am the Manager of Renewable Energy Programs and Technical Services for Dominion Energy South Carolina, Inc. ("DESC").

Q. BRIEFLY STATE YOUR EDUCATION, BACKGROUND, AND EXPERIENCE.

A. I am a graduate of the University of South Carolina with a Bachelor of Science degree in Mechanical Engineering and I am licensed in South Carolina as a Professional Engineer. I began my utility career in 1986 and have worked at various positions in Electric Operations at DESC,[1] including working as the Manager of Materials, Equipment, and Standards with the engineering responsibility for equipment standards and approval, as well as construction and work standards for DESC's transmission and distribution systems (including developing DESC's early

[1] South Carolina Electric & Gas Company changed its name to DESC in April of 2019. For ease of reference, I refer to the company as DESC for the period before the name change as well.

DER programs). In 2015, I assumed my current role as Manager of Renewable Energy Programs and Technical Services where I helped develop and have responsibility for Customer Scale Renewable programs which includes DESC's net energy metering ("NEM") programs.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA (THE "COMMISSION")?

A. Yes. I previously provided testimony to the Commission in Docket No. 2020-2-E and Docket No. 2020-63-E.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to (i) provide the Commission with an overview of DESC's current NEM programs, (ii) outline the requirements of S.C. Act No. 62 of 2019 ("Act 62") related to current NEM programs, and (iii) provide an overview of DESC's analysis in this docket.

Q. PLEASE BRIEFLY DESCRIBE THE CONCEPT OF NEM.

A. NEM is a billing arrangement between a utility and a customer where the customer utilizes an on-site renewable generator to produce electricity in order to reduce the amount of electricity consumed from the utility. DESC currently offers NEM programs for residential and non-residential customers. However, DESC's NEM customers are typically residential customers that have rooftop solar panels.

Those rooftop solar panels produce electricity that can either be consumed on-site by the customer to offset the electricity delivered by DESC—thereby reducing their energy bill—or sent back to DESC if the customer generates electricity in excess of their consumption over an applicable "netting" period. This excess is then tracked by DESC as a credit and the customer is allowed to use that credit to offset their consumption at times that the customer is receiving power from DESC because the customer's system is not generating enough electricity to serve the customer's full load requirements. This arrangement allows for customers to then use all their generation to offset usage even if they are not consuming at the time of generation.

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF DESC'S CURRENT NEM PROGRAMS.

A. DESC's current NEM programs are a product of S.C. Act No. 236 of 2014 ("Act 236"), which required the Commission to review and approve proposed NEM programs that complied with the provisions therein. In Order No. 2015-194—issued in Docket No. 2014-246-E on March 20, 2015—the Commission fulfilled that mandate by approving a settlement agreement among the parties to the docket (the "Act 236 Settlement"). Parties to the Act 236 Settlement included DESC, clean-energy advocates, solar developers, other utilities, as well as the Office of Regulatory Staff. Although DESC Witness Everett provides greater detail regarding current NEM programs developed under the Act 236 Settlement, key components of these programs include:

- A 1:1 kilowatt hour ("kWh") crediting rate (the "1:1 Rate") within the month with credit carry-over provisions to allow excess credits to be available from one month to the next;
- Utility incentives intended to accelerate solar adoption in South Carolina. For residential customers this included NEM and a performance-based incentive where customers received an extra billing credit for all the energy generated;
- A methodology to compute the value of distributed energy resources on the DESC system (such value, the "NEM Methodology Value"); and
- A recovery mechanism by which DESC recovers the difference between the DER Value and the 1:1 Rate via the fuel clause, just as DESC recovers other distributed energy resource program expenses.

Although Act 62 envisions the establishment of a successor NEM program, Act 62 does not change the terms upon which current NEM programs are offered. Additionally, Act 62 requires that DESC offers service under the existing NEM programs until May 31, 2029, for customers that submit applications between May 16, 2019, and June 1, 2021.

Q. PLEASE PROVIDE AN OVERVIEW OF THE CURRENT NEM PROGRAMS.

A. Act 236 and the Commission, through its implementation orders, helped establish NEM in South Carolina. Today, as a result of these efforts and the efforts of DESC, we have robust NEM programs. Currently, DESC has 10,997 customers that take service under an NEM tariff. These customers collectively are capable of supplying a maximum of 88,327 kW to DESC. To put this into perspective, DESC

recently ranked first in the state for the amount of distributed solar on its system, and when combined with utility-scale solar, DESC was ranked second in the entire Southeast in terms of watts per customer of solar power sourced to customers.[2] When you examine these numbers, particularly relative to DESC's size, it is apparent that the customer-generation market is well-established within the DESC service territory. While the current program successfully established the customer-generation market in the DESC service territory, it is time to reform DESC's NEM offerings and plan for a new Solar Choice Program that better aligns benefits with cost of service.

Q. PLEASE EXPLAIN KEY SIMILARITIES BETWEEN NEM CUSTOMERS AND NON-NEM CUSTOMERS.

A. Like non-NEM customers, NEM customers consume peak power when the sun is not shining. This means that when the sun is not shining, load profiles for NEM customers are identical to load profiles for non-NEM customers because they consume electricity in similar patterns across the evening and through mid-morning hours year-round, even during peak periods. For example, Figure 1 shows the average load profile and average corresponding solar output for DESC's NEM customers on a peak day in summer of 2019.

[2] Southern Alliance for Clean Energy (2020). *Solar in the Southeast, Annual Report*.

FIGURE 1
Summer Peak Day - 2019

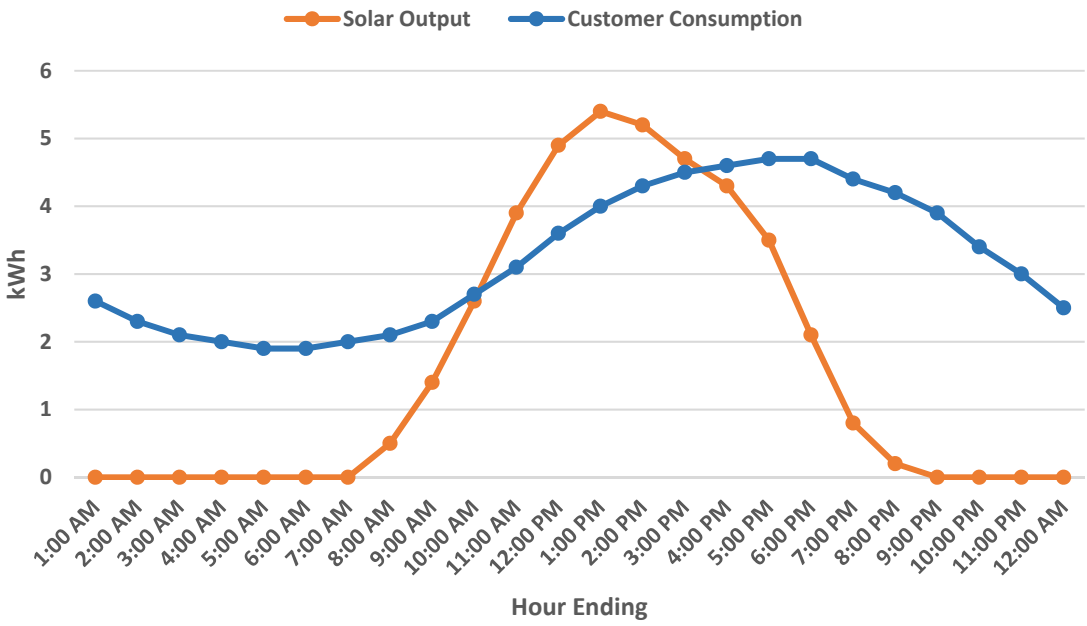


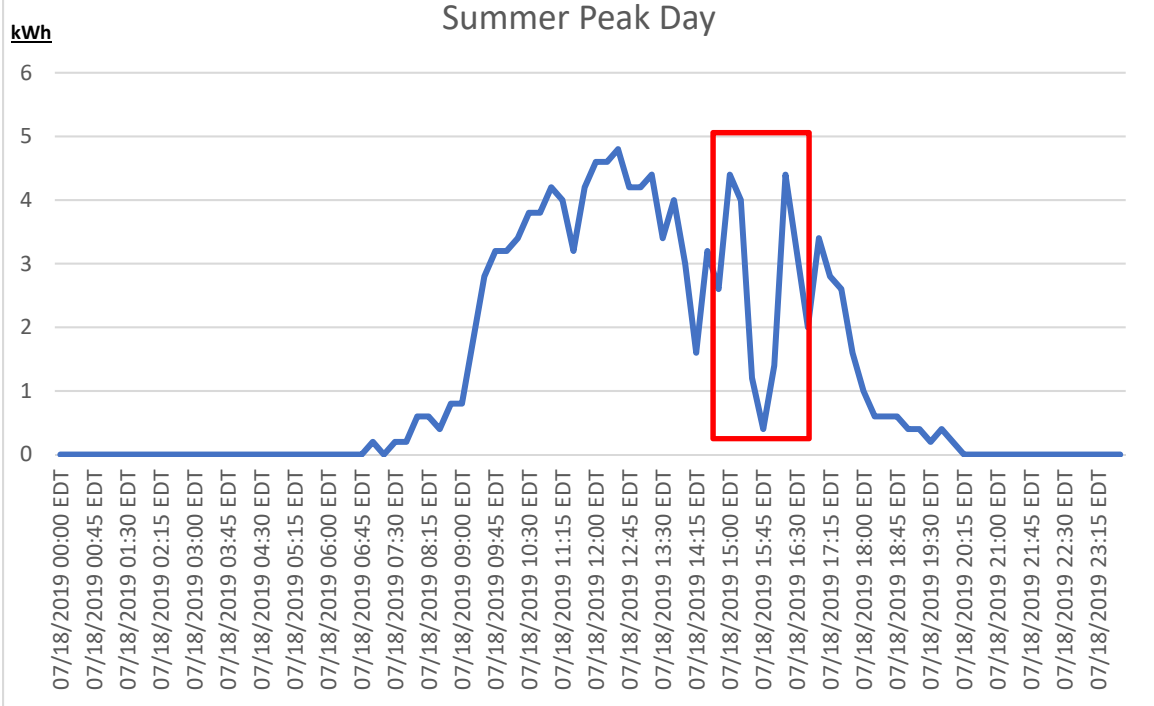
Figure 1 illustrates that an average NEM customer could self-supply power during the middle of that day because the sun was shining. However, as load increased into the evening hours, the solar output dropped dramatically because sunlight was rapidly diminishing, and the typical NEM customer was more and more reliant on DESC to supply it power during this peak time—just like a non-NEM customer. Additionally, just like non-NEM customers, it is possible for NEM customers to consume energy supplied by DESC even when the sun is shining, depending on various factors such as fluctuations in that customer's load and variability of the PV system generation. As I describe below, these similarities are part of the reason that DESC must plan and build its system to serve NEM customers during peak times just as it would for non-NEM customers.

Q. ARE THERE ALSO KEY DIFFERENCES BETWEEN NEM CUSTOMERS AND NON-NEM CUSTOMERS?

A. Yes, there are also key differences because the addition of rooftop solar has several consequences on the load profile of a typical NEM customer. For example, as shown in Figure 1, an NEM customer may be able to supply most of its power during the middle of the day if the sun is shining. From DESC's perspective, the load profile of the customer would decrease in that scenario because the customer is less reliant on DESC to provide power due to increased solar production. For non-NEM customers who remain completely reliant on DESC, the mid-day load profile typically sees no such decrease because the customer cannot offset its load requirements with solar power.

Additionally, the load profile of an NEM customer simply contains more variability than a non-NEM customer because of the generation profile of solar. For example, on a day when mid-day thunderstorms move quickly over an NEM customer's residence, that customer could change rapidly from self-sufficient to completely reliant on DESC to supply power, and then back to self-sufficient. Figure 2 illustrates this inherent variability in solar generation and provides the generation profile from a specific NEM customer on that same peak day in the summer of 2019.

FIGURE 2
Summer Peak Day



Note that the solar generation fluctuates drastically into the afternoon, with a spike in generation, substantial drop in generation, and yet another spike in generation—highlighted in red—all occurring within approximately 90 minutes. This profile not only varies wildly intra-day, but it also varies substantially from the average generation profile shown in Figure 1, which occurred on the exact same day.

Q. GIVEN THAT NEM CUSTOMERS ARE ABLE TO SELF-SUPPLY POWER DURING CERTAIN TIMES OF THE DAY, IS DESC ABLE TO PLAN ITS SYSTEM TO SERVE LESS LOAD AS A RESULT?

A. No. From a power supply and reliability standpoint, DESC must plan and build the DESC system for NEM customers just as it does for non-NEM customers. That is, we plan to make sure we have enough generation and delivery capacity to

meet customer demands. As I described above, NEM customers still experience periods, even only an hour at a time, where they are fully reliant on DESC for power during any and all hours of the day. Likewise, DESC must be able to respond to the variability of the customer's generation because—from DESC's perspective—it simply means that the customer's power requirements from DESC vary just as wildly. Because of this variability and the fact that NEM customers experience periods during which they consume power just like non-NEM customers, it would be impossible to plan differently for NEM customers. As such, DESC must plan, build, and invest in the DESC system to serve the full load requirements of these customers 24 hours a day—including during peak hours. In short, NEM results in a reduction in the energy these customers consume from DESC, but it does not reduce the capacity DESC must plan for to ensure reliable service to all customers.

Q. PLEASE EXPLAIN ACT 62'S REQUIREMENT TO EXAMINE SUCH COSTS AND BENEFITS ASSOCIATED WITH THE CURRENT NEM PROGRAMS.

A. Act 62 addresses current NEM programs in several ways because Act 62 is meant to "build upon the successful deployment of solar generating capacity through Act 236" via the establishment of the Solar Choice Program. In establishing the Solar Choice Program, the Commission must "fairly allocate costs and benefits to eliminate any cost-shift and subsidization to the greatest extent practicable." In creating a Solar Choice Program that fulfills these goals, the Commission is required

to consider the costs and benefits arising from the current NEM programs. The cost-benefit analysis shall evaluate:

> (1) the aggregate impact of customer-generators on the electrical utility's long-run marginal costs of generation, distribution, and transmission;
>
> (2) the cost of service implications of customer-generators on other customers within the same class, including an evaluation of whether customer-generators provide an adequate rate of return to the electrical utility compared to the otherwise applicable rate class when, for analytical purposes only, examined as a separate class within a cost of service study;
>
> (3) the value of distributed energy resource generation according to the methodology approved by the commission in Commission Order No. 2015-194;
>
> (4) the direct and indirect economic impact of the net energy metering program to the State; and
>
> (5) any other information the commission deems relevant.

Q. WILL DESC ADDRESS ANY OTHER ITEMS IN THIS DOCKET?

A. Yes. S.C. Code Ann. § 58-40-20(C)(2), as implemented by Act 62, requires the Commission to establish "methodology for calculating the value of energy produced by customer-generators" in this generic docket. As such, DESC will provide testimony on this methodology, and address the two additional requirements in the Commission Directive issued in this docket on August 26, 2020, which requires DESC to provide testimony related to (i) NEM best practices in other jurisdictions and (ii) a 10-year solar forecast in the DESC service territory.

Q. HOW DOES DESC INTEND TO ADDRESS THE REQUIREMENTS OF THIS DOCKET?

A. DESC engaged Guidehouse—a third-party consulting firm—in order to present the Commission with a comprehensive overview of Act 62's requirements, as well as an analysis of the items required in the Commission's Directive. Guidehouse is a global professional services firm that has a wealth of expertise and experience in performing complex, technical analyses for utilities, utility commissions, and energy providers across multiple jurisdictions. DESC has utilized Guidehouse on a number of matters relating to Act 62 and Guidehouse has gained a unique understanding of DESC's system operations.

Guidehouse leveraged DESC's internal subject matter experts, and its institutional knowledge to provide the Commission with a meaningful assessment of the items required in this docket. Margot Everett and Scott Robinson from Guidehouse will present testimony on behalf of DESC. DESC Witness Everett is a Director with Guidehouse, and DESC Witness Robinson is an Associate Director with Guidehouse. Each of these witnesses was a critical part of DESC's preparation for this docket. DESC Witness Everett will provide (i) the calculations, assumptions, and figures utilized by DESC in performing the cost-benefit analysis required by Act 62, (ii) a review of the current methodology for valuing energy supplied by NEM customers under Act 236, as well as suggested improvements to such methodology, and (iii) a summary of leading practices in customer-generation valuation, (iv) a survey of NEM best practices from other jurisdictions, and (v) the

conclusions derived therefrom. Likewise, DESC Witness Robinson will provide the Commission with DESC's 10-year forecast of solar distributed generation in its service territory. These analyses fulfill the mandate of Act 62 and the Commission Directive and can also be utilized by the Commission in the upcoming Solar Choice docket to fulfill Act 62's additional NEM requirements that were not present in Act 236.

Q. CAN YOU PROVIDE A HIGH-LEVEL OVERVIEW OF DESC'S APPROACH TO THE COST-BENEFIT ANALYSIS REQUIRED BY ACT 62?

A. Yes. DESC Witness Everett utilized four widely accepted cost-benefit tests to evaluate certain aspects of DESC's current NEM programs. These tests evaluated a range of factors, such as (i) the quantifiable benefits and costs to a customer as a result of its participation in an NEM program and (ii) implications on customer bills or rates due to changes in utility revenues and operating costs caused by the NEM program. DESC Witness Everett describes these tests and corresponding results in greater detail in her direct testimony.

Q. GIVEN DESC'S ANALYSIS OF THE LEADING PRACTICES IN VALUATION OF CUSTOMER-GENERATION, IS DESC PROPOSING A CHANGE TO THE METHODOLOGY USED TO VALUE THE ENERGY PRODUCED BY CUSTOMER-GENERATORS?

A. Yes. As I describe above, the current methodology that DESC uses to value this energy was established in the Act 236 Settlement. DESC Witness Everett provides a detailed analysis of this methodology and its eleven components, which include things like avoided energy costs, integration and interconnection costs, and administration costs. As described by DESC Witness Everett, DESC is proposing a change to the calculation behind two of those components—(i) Avoided Energy and (ii) Energy Losses/Line Losses. DESC believes that these limited changes to the current methodology are appropriate and consistent with Act 62.

Q. PLEASE EXPLAIN HOW DESC'S ANALYSIS OF ITS CURRENT NEM PROGRAMS CAN BE LEVERAGED WHEN DEVELOPING THE SOLAR CHOICE PROGRAM.

A. Although Act 62 recognizes the value in analyzing the current aspects of DESC's NEM programs and build upon the same, it implements additional parameters for the Solar Choice Program. One key additional parameter within Act 62 is that the Solar Choice Program must eliminate cost-shift and subsidies "to the greatest extent practicable." As I described above, NEM customers are able to offset the power required from DESC through self-supply. As a result, NEM customers typically experience lower energy bills than non-NEM customers. Nevertheless, as I explained earlier, DESC still makes investments to ensure NEM customers have reliable service when their generation resource is not producing enough to cover the customer's load. Under South Carolina's current NEM construct, DESC is unable

to recover on those investments from NEM customers at a rate equal to its recovery on the same investment for non-NEM customers. This means that DESC must recover these costs under the current NEM programs from other customers, which is often characterized as a "cost-shift" or "subsidy." This cost-shift, as evidenced by DESC Witness Everett's testimony, demonstrates that customer-generation under the current NEM program is not providing a cost-effective alternative to wholesale energy resources. The results from the cost-benefit analysis under Act 62, as summarized above, will provide tools for the Commission and DESC to navigate the upcoming ratemaking process to ensure that the next generation of NEM lives up to the spirit of Act 62 by eliminating such cost-shifts and subsidies "to the greatest extent practicable."

Q. HAVE OTHER JURISDICTIONS DEVELOPED NEM PROGRAMS THAT WOULD FULFILL THESE ADDITIONAL PARAMETERS WITHIN ACT 62?

A. Yes, and DESC Witness Everett's testimony provides the Commission—in accordance with the Commission Directive issued on August 26, 2020—with a survey of best practices highlighting innovative rate structures aimed at eliminating the very costs-shifts and subsidies envisioned by Act 62. For example, many utilities are moving toward valuing excess generation from these PV systems valued at the utility's avoided costs rather than the retail rate. This trend addresses several concerns around the equity and efficiency of NEM. First, it creates equal

compensation for all customers, regardless of rate schedule. That is, under NEM, the 'credit' a customer receives for their excess generation is dependent upon the rate schedule they are on. Second, it more closely links the actual value of the customer-generation output to actual costs that can be avoided by DESC as a result of this alternative resource. Finally, it allows for consideration of the differences in value of customer-generation output within the day, and this time-variant pricing structure is expressly contemplated by Act 62.[3] Although DESC Witness Everett provides a thoughtful and comprehensive survey, I want to stress that the value of any one of these practices as it relates to DESC can only be evaluated in light of the overall program within which those practices are incorporated. The components of these programs are typically dependent upon one another and the "best-practice" under one program may not be the same for another.

Q. CAN YOU PLEASE PROVIDE A HIGH-LEVEL OVERVIEW OF THE SOLAR FORECAST PROVIDED BY DESC IN THIS DOCKET?

A. Yes. Although DESC Witness Robinson will provide a detailed account of how the study was conducted and the corresponding results, based on current policy assumptions, DESC expects the number of rooftop solar installations in its service territory to grow at a steady pace each of the next 10 years across all customer classes, from residential to industrial. As I stated above, Act 62 recognizes we are past the point of expanding NEM simply for the sake of expanding. Rather, Act 62

[3] *See* S.C. Code Ann. § 58-40-20(F)(3)(b).

and the Commission—through its thoughtful Directive—envision a careful analysis and intentional design that supports expansion but not at the cost of other customers or the utility.

The complexities and nuances that are inherent in NEM ratemaking will only increase given the significant projected growth of rooftop solar and the new ratemaking principles within Act 62 that simply were not present in Act 236. In establishing the Solar Choice Program, it will be critical for the Commission and DESC to leverage the results of the analyses in this docket and best practices from other jurisdictions to ensure that the growth of rooftop solar in DESC's service territory is met with a measured, equitable ratemaking approach that appropriately accounts for these complexities.

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes, it does.